

Appl. No. : 09/547,588
Filed : April 11, 2000

REMARKS

The foregoing amendments are responsive to the December 10, 2002, Office Action. Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the following remarks.

Response to Objections to Claims 40 and 46 Under 35 U.S.C. § 112

The Examiner objected to informalities in Claim 40 and 46. Claims 40 and 46 have been amended as specified by the Examiner. Applicants request that the Examiner withdraw the objection to Claims 40 and 46.

Response to Objections to Claims 31, 32, and 37 Under 35 U.S.C. § 112

The Examiner objected to informalities in Claim 31, 32, and 37. Claim 31 has been amended to make the phrase "said spectral domain waveform" consistent with its antecedent basis, as requested by the Examiner. Claim 37 has been amended to make the phrase "said unknown pulserate" consistent with its antecedent basis, as requested by the Examiner. Claim 32 depends from Claim 31, and the objection to Claim 32 is traversed by the amendment to Claim 31. Applicants request that the Examiner withdraw the objection to Claims 31, 32, and 37.

Response to Objection to Claim 50 Under 37 CFR 1.75

The Examiner objected to Claim 50 under 37 CFR 1.75 as being substantially identical to Claim 49. Claim 50 has been amended to overcome the objection. In view of the amendments to Claim 50, Applicants request that the Examiner withdraw the objection to Claim 50.

Response to Rejection of Claims 31-34, 37-39 and 45 Under 35 U.S.C. § 102(e)

The Examiner rejected Claims 31-34, 37-39 and 45 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,853,364 to Baker et al. ("Baker"). Baker teaches defining a comb filter to notch out the energy of the signal. Baker defines the comb filter to cause the output noise outside the fundamental and chosen harmonics to have the smallest energy. Baker searches for the fundamental by using the first and second derivatives of the squared noise with respect to the fundamental to perform a Newton-Raphson search (*see e.g.*, Column 13 at lines 21-28). Thus, the teachings of Baker do not teach or suggest the invention claimed by Applicants. Baker focuses on finding the pulserate by reducing the noise using a Newton-Raphson search procedure. Applicants focus on finding peaks in the spectrum and applying a system of rules to sort or classify the peaks to determine the pulserate.

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Regarding Claim 31, Baker does not teach or suggest a system to transform a time-domain plethysmograph dataset into a spectral-domain dataset, identify a plurality of spectral peaks in the spectral domain dataset, sort the plurality of spectral peaks into one or more spectral peaks corresponding to a fundamental frequency and one or more harmonics of the fundamental frequency, and estimate a pulserate from the fundamental frequency and the harmonics.

Regarding Claim 33, Baker does not teach or suggest transforming a time-domain plethysmograph waveform into a spectral domain waveform, identifying a plurality of spectral peaks in the spectral domain waveform, classifying the plurality of spectral peaks into a first group comprising one or more spectral peaks corresponding to a fundamental frequency and a second group comprising one or more harmonics of the fundamental frequency, and estimating a pulserate from at least the first group.

Regarding Claim 37, Baker does not teach or suggest means for producing a time-domain plethysmograph waveform, means for transforming the time-domain plethysmograph waveform into a spectral domain waveform having a fundamental spectral peak corresponding to the pulserate and one or more ancillary spectral peaks, and classifying the fundamental spectral peak and the ancillary spectral peaks to estimate the pulserate.

Regarding Claim 38, Baker does not teach or suggest a system, to transform a time-domain plethysmograph dataset into a spectral-domain dataset, classify spectral lines in the spectral-domain dataset into a group of spectral values corresponding to a fundamental and one or more harmonics of the fundamental, and estimate a pulserate from the group of spectral values according to one or more rules.

Regarding Claim 39, Baker does not teach or suggest a device to transform a time-domain plethysmograph dataset into a spectral-domain dataset, classify spectral lines in the spectral-domain dataset into a group of spectral values corresponding to a first group of one or more spectral lines and at least one second group of spectral lines, the second group of spectral lines comprising at least one harmonic of the first group, and estimate the pulserate from the first group and at least one of the second group.

Regarding Claim 45, Baker does not teach or suggest a monitor to transform a time-domain representation of a plethysmograph waveform into a spectral-domain representation of the plethysmograph waveform, select a selected portion of the spectral-domain representation based on one or more rules relating to characteristics of spectral lines in the selected portion and one or more

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harmonics of spectral lines in the selected portion, and estimate the pulserate from the selected portion of the spectral-domain representation.

Accordingly, Applicants assert that Claims 31-34, 37-39 and 45 are in condition for allowance, and Applicants request allowance of Claims 31-34, 37-39 and 45.

Summary

The Examiner has indicated that Claims 44, 47-49 and 51-52 are allowable. Applicants respectfully assert that Claims 31-52 are in condition for allowance, and Applicants request allowance of Claims 31-52. If there are any remaining issues that can be resolved by a telephone conference, the Examiner is invited to call the undersigned attorney at (949) 721-6305 or at the number listed below.

Respectfully submitted,
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Dated: March 6, 2003

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